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ABSTRACT

This study contains two investigations conducted as part of a larger research project. "Job Training in the School Sector." The overall goals of the investigations include the following: (a) to analyze the jobs of school principals in the compulsory school, tutors in teacher training, and teachers in Labor Market Training (LMT); (b) to systemize the data and obtain job descriptions on which training could be based; and (c) to try out self-observation as a method of collecting data for job analysis. In the first investigation, 63 school principals and 45 tutors utilized specially constructed diary sheets to observe and register their own behaviors. In order to analyze the data, it was first reduced to units, and the units were then sorted into newly constructed categorization patterns. Task assessment was then measured by means of frequency and time consumption analyses. The second investigation attempted to map the problems facing teachers engaged in labor market training (LMT), a type of vocational adult education. The purpose of this investigation was to develop a kind of problem inventory which could form a base for the training of future LMT teachers and further training for those already in service. Data was gathered from 16 LMT teachers using a self-observation diary. After completion of the diary, each participant received a follow-up interview. The diary investigation produced reports on 456 difficult tasks and the follow-up interviews elicited 141 more. (JS)

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SERIES ALTERA XXII

LENNART FREDRIKSSON

The Use of Self-Observation and Questionnaires in Job Analysis for the Planning of Training

I School leaders and tutors

II Teachers in labor market training

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Introduction

This summary is based on two reports:

Fredriksson, L. Självobservation som datainsamlingsmetod vid befattningsanalys av skolledare och handledare. /Self-observation as a method of collecting data for job analysis of school principals and tutors./ *Pedagogisk-psykologiska problem* (Malmö: School of Education), No. 163, 1972.

Fredriksson, L. Analys av lärarbefattningar inom arbetsmarknadsutbildningen som grundval för utbildning: Självobservation och enkät. /Analysis of teaching jobs in labor market training as a basis for training: Self-observation and questionnaires./ *Pedagogisk-psykologiska problem* (Malmö: School of Education) No. 230, 1974.

Both the investigations reported are parts of a larger research project, "Job training in the school sector" (Project B). The jobs that are taken up in the present report are school principals in the compulsory school and tutors in teacher training (Part I) and teachers in labor market training (Part II). One goal of the investigations has been to analyse the jobs named above and systematize the data, thus obtaining job descriptions on which training for the jobs in question could be based. Another goal has been to try out self-observation (diary) as a method of collecting data for job analysis. Different variations of the self-observation method have been applied in Parts I and II.

Part I. School principals and tutors

1. Problems

1.1 Background and aims

This study is part of a larger research project, "Befattningsanalyser som grundval för utbildning och fortbildning inom skolsektorn: skolledare, metodiklektorer och handledare" (Job analyses as a basis for training and further education in the school sector: school principals, lecturers in methodology and tutors) (Project B). This project, which is financed by the National Board of Education, has been underway for the past few years at the Malmö School of Education's Department of Educational and Psychological Research. Up to now no systematic training has been arranged in Sweden for people holding the appointments dealt with by the project, with the exception of summer courses and evening courses of short duration. The purpose of this part-study is to test self-observation as a method for the collection of data on two of the jobs studied within Project B: school principal and tutor. The study also seeks to give a overall picture of the two jobs, based on the data collected by means of self-observation techniques.

1.2. The project "Job analyses" [Project B]

In order to place the self-observation study in a wider context, it is necessary to outline some of the main features of Project B. A clear description of how Project B has been planned is given by Gestrelius (1970, p. 26). The work can be seen to fall into a succession of steps (Box 1).

Box 1. Steps in the work of Project B.

1. Carrying out job analysis.
2. Working out job descriptions based on the job analysis.
3. Determination of training goals after evaluation of the situations in the job description.
4. Transformation of training goals into training content.
5. Carrying out experimental training, which after revision produces the terminal product, job training.

Points 1 – 3 form a first phase, 4 – 5 a second phase. Of the steps mentioned in Box 1, the self-observations concern point 1 and to some extent points 2 and 3, while points 4 and 5 are not involved at all.

1.3. Discussion of methods

1.3.1. *Self-observation*

As implied by the name, self-observation means that the job-holder observes and registers his own behavior. The method is applicable for analysis of jobs that largely involve tasks and duties of an intellectual nature, with a consequent low level of observability. If the registration is carried out immediately on, for example, specially constructed diary sheets, the risk of forgetfulness that exists in interviews and questionnaires is eliminated, while on the other hand the risk of post-rationalization increases. One also avoids the discomfort that the respondent can feel when an observer is present. Apart from written registration, other methods are possible, such as tape-recording. Self-registration also eliminates the feeling of discomfort that the job holder can sometimes experience in registration during interviews by means of notes or tape-recording. The method has some of the disadvantages of the questionnaire method. There is a risk of a large non-response, unless the respondents can be given a sufficiently strong motive for participating.

1.3.2. *The time aspect: the duration of the work situations, the length of the observation periods and seasonal variation*

Self-observation involves a lot of work for those participating. For this reason, considerable emphasis must be placed on the limitation of the period during which registration is to occur. One possible hypothesis is that a short period gives as much and more precise information as a longer period, because of the effects of fatigue. Experiments that have been carried out with registration periods ranging from one to four weeks (Carlson, 1964) have shown that even after one week the information has become less correct. One advantage with (self) observation methods is that it is possible to check seasonal variations that can occur in the jobs analysed in Project B. It is conceivable that the job of school principal varies both in time-consumption and the content of the tasks and duties. The jobs of tutors and lecturers in methodology can vary depending on the amount of work needed for different types of personality among the student teachers. Consequently, observations should be made on several different occasions for the same job-holder. Wirdenius (1961) warns against self-observation, because of the great amount of work needed in the coding stage. In this context the number of subjects participating in the experiment and the length of the periods of registration should be taken into consideration, since the amount of data collected is a product of the number of subjects and the number of days during which registration takes place. The time aspect in self-observation can be discussed from several angles. The actual registration paper (the diary sheet) presents an oppor-

tunity for obtaining information on the *frequency* and *duration* of the tasks. The period of time during which observation takes place can be of varying length and furthermore the periods of observation can be set at different times in the year, in order to capture seasonal variations (Evans, 1964) in the job.

A point to note is that researchers who have been engaged in job analysis say that usually about two-thirds of the working time of people in top positions is taken up by personal contacts. Problems of communication and the structure of organisation, which are of central importance for school principals, have been dealt with by Likert (1966) among others, and he makes some interesting comparisons between how the contact patterns of highly productive and less productive managers differ. The highly productive ones, for example, more often use group methodology in communicating with subordinates and more often explain the goals of the production. Such questions are brought to the fore by the collected data, even though the objective of the study is training needs.

1.3.3. *Self-observation methods for different job-holders*

When choosing between direct observation and self-observation, Project B has decided to try self-observation. Among the factors influencing this decision were staffing and financial resources, and the intellectual nature of the jobs concerned. The method appears to be suitable to varying degrees for the jobs with which the project is working. School principals, who have their own offices, probably find it easier to follow the instructions about immediate registration than tutors, who often lack a room of their own. Frequent comparisons are made in the work presented here between the two jobs in the school sector that are analysed in the observation study, and business executives (school principals) and supervisors (tutors). The function of the last-named job-holders as supervisors is stressed in the Tutors' Handbook (1967, p. 13). One advantage in the analysis of school appointments compared to business appointments appears to be that the former have a fairly uniform structure, thus avoiding the problem of heterogeneity within the same job at different schools (firms). Two questions should be kept constantly in mind when planning self-observation studies: 1) Is the question (the investigation) worth answering? 2) Is the work of registration too onerous? The first question is connected with the problem of motivation that was discussed earlier. The second question should be considered above all when the registration form is being constructed. The main aim must always be to design a form (diary sheet) that does not cause the respondent undue difficulties, but that nevertheless provides sufficient information for the purpose of the investigation. When going through the literature on some Swedish and foreign studies, which have made use of self-observation methods, one notices two points in particular that are of importance from the point of

view of method. The number of respondents is *small*, 10—27, and the periods of registration *short*, 1—4 weeks, usually 1 week. It is obvious that the previously-mentioned warning given by Wirdenius (1961) about the extensive coding work involved is justified. The data that are collected in the exploratory phase necessitate systematization in the form of some kind of classification (categorization). We shall return to the question of who is to do this work and how it is to be done in a later discussion of the construction and checking of a categorization schedule for information material collected by means of self-observational methods.

1.4. A few queries

The main method used by Project B for the collection of data has been the interview. As an alternative method, the project decided to try self-observation. Two important questions can be formulated in the context of the previous discussion: 1) What influence do different *degrees of control* have in the collection of data by means of self-observation? 2) What influence do the *length and relative order of the observation periods* have in the collection of data by means of self-observation? These two internal methodological questions can be added to by the question 3) What is the relation between data collected by self-observation and data collected by other methods (interview, text analysis)?

2. Procedure of investigation

2.1. Variables, models and timetable

On the basis of the results from a preliminary investigation, the study was arranged as a 2×2 factorial experiment (Box 2).

Box 2. The design for both school principals and tutors can be illustrated by means of the model below, in which the length of the observation periods and the degree of control have been varied.

		Length of observation period	
		1 week	2 weeks
Control	Light	Group 1	Group 2
	Strict	Group 3	Group 4

Since groups G_2 and G_4 have registration periods that are twice as long, two comparisons are possible, firstly between one week and the first week of the two-week period and secondly, between one week and the second week of the two-week period. These comparisons can show, for example, whether the respondents tire during the latter part of a longer registration period. Comparisons between the first and second weeks of a two-week period are also possible.

A further variation of control has after discussion also been worked out and tested. NC (no control) gives the respondent more freedom when registering. The difference between NC and the other variations is that registration has taken place during *one* two-week period, as opposed to *two* one-week or two-week periods otherwise. NC_1 has been used for both categories of job-holders and has been placed during periods with "normal" work loads. NC_2 and NC_3 have been used only for the job of school principal, in order to check the seasonal variation. NC_2 has been placed during a two-week period at the end of the school year and NC_3 during a two-week period at the start of the school year.

Box 3. Checking seasonal variation in the job of school principal.

G_5
G_6
G_7

NC_1 = normal period
NC_2 = end of school year
NC_3 = start of school year
} only school principals

The registration periods for the school principals have been chosen partly on the basis of telephone interviews with the subjects of the experiment themselves when the study was introduced to them, and partly on the basis of facts presented in the report of the School Administration Commission (1964). This commission worked out the work load in terms of time for what was called an average headmaster's area.

The aim has been to place the registration periods, with the exception of G_6 and G_7, during intervals with a "normal" work load. The registration periods for the tutors were decided with the job-holders themselves when the study was presented. The periods were of necessity restricted to occasions when student teachers were available to be tutored. The teacher training is namely organized in such a way that the tutors employed only serve as tutors during certain periods and in the intervals between function only as teachers, when they are of no interest for this investigation. This shift between the roles of teacher and tutor can occur during the same working day. These circumstances explain the relatively little amount of data that has been collected from the tutors. The way in which the observation periods were placed during the school year is shown in Box 4.

Box 4. Timetable for collection of data.

1969												1970					
Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
×						×	×			×	×			×			×

Prelim. invest.

Stage 1 Light control Group G_1; G_2; G_5

Stage 2 Strict control Group G_3; G_4

End of school year Group G_6

Start of school year Group G_7

As shown in Box 4, the collection of data has extended over a period of about 1 1/2 years, with Stages 1 and 2 placed in the school year 1969/1970.

2.2. Diary sheets and instructions

The collection of data has been organized according to a two-stage model. The first stage comprises collection by means of less controlled diaries, in which the respondents register their tasks in their own words. The collected material then provides the foundation for a categorization which is used for a more strictly controlled collection of data. Two versions of the less controlled diary type have been constructed. One type (here called NC, no control, see Box 5) has only been controlled with respect to the work situation and the marking of time and uncertainty (U) (=the difficulty aspect). Otherwise the respondent has been allowed to use the space on the sheet freely.

Box 5. Version of diary sheet marked NC = no control (groups 5–7).

Report from (name)	Date	Day of week

Time	Work task	U

The other version (here called L, light control, see Box 6) can be said to be more controlled, since time limits have been introduced and the space for notes restricted. The sheet also has space for marking personal contact (P) and place (Pl).

Box 6. Version of diary sheet marked L = light control (groups 1–2).

Name	Date	Day

Time	Work task	U	P	Pl
0630				
0700				

The registrations concerning uncertainty (U), personal contact (P) and place (Pl) are made in accordance with special instructions called "symbols" (Box 7).

Box 7. Instructions for filling in the columns U, P and Pl.

Symbols

The three columns headed U, P and Pl are to be filled in as follows:

U stands for uncertainty

I = slightly uncertain
II = uncertain
III = very uncertain

The intention is that the leader of the experiment should have some insight into situations in which the job-holder feels some *uncertainty* about how to tackle the task involved. When routine tasks are carried out, the column is left empty.

P stands for *personal* contacts made in connection with the task.

Pl stands for the *place* where the task is carried out.

P and Pl are to be filled in as follows:

School principals

P	Pl
A. Secretary	a. Own office
B. Caretaker	b. Own school
C. Supervisory teacher	c. Outside own school
D. School nurse	d. Home
E. Teacher	e. Other
F. Pupil	
G. Parents	
H Others	

Tutors

P	Pl
A. Staff at own school	a. Classroom in own school
B. Staff at School of Education	b. School of Education
C. Student teacher	c. Staff room in own school
D. Pupils	d. Home
F. Others	

The concept of uncertainty has been introduced in order to try to get at tasks that are important from the training point of view. The respondents have been asked to mark tasks that they find difficult in handling. These "difficult" tasks should then be taken up in future training. The registrations of place and personal contacts are intended to elucidate the immediate environment of the jobs, making it possible to map the jobs' pattern of contacts and "local" mobility. The markings of time provide information about the duration of the tasks. In job analysis which aims at organizational changes, the work is often concentrated on this duration aspect alone.

The second stage of the self-observation investigation comprises a more strictly controlled collection of data based on the exploratory phase. Categorization of data from the exploratory phase forms the foundation for Stage 2, so that the respondents are supplied with diary sheets (Box 8) and a schedule of categories that has been produced from data from the explorative phase. The categories are divided into a number of main categories with sub-categories.

Box 8. Version of diary sheets marked S = strict control (groups 3 – 4).

Report from (name)					Date	Day of week			
Time	Work task	U	P	Pl	Time	Work task	U	P	Pl
0630					1130				
0700					1200				

Using symbols (see Box 7) and numbers: Roman for main category (see Boxes 9 and 10) and Arabic for sub-category (examples are given in the original report), the respondents are to fill in work tasks in accordance with the schedule. Otherwise the columns for time, personal contacts and place are filled in in the same way as with light control. There is one small difference in the time markings. The shortest interval of time used during the exploratory phase was five minutes. This interval has been taken as the unit used during the second phase.

2.3. Subjects of experiment

2.3.1. *Populations*

By school principals the project means headmaster/mistresses and directors of studies, who have held their posts for at least one whole year and who are still in service (but not including regional headmasters or directors of education). By tutor is meant in the project both teachers with long-term appointments (teachers at experimental and demonstration schools, appointed for six years, and tutors appointed for periods of three or one year(s), and other teachers who are called on more sporadically to act as tutors in the teacher training and who are serving as tutors at the time of the collection of data. The same stipulation applies for both categories, however, that they should have functioned as tutors regularly for at least two years and that they during this time should each term have acted as tutor for student teachers doing their term of practice teaching or have been tutors for at least two practice periods (series). The self-observation study has only worked with information from tutors at the Schools of Education in Stockholm, Gothenburg, Malmö, Umeå and Linköping, which are the largest of the Schools of Education in Sweden.

2.3.2. *Principles of selection*

The respondents were selected by means of a random stratified sampling of school principals from the population of school principals in five Swedish

counties. The reasons for using these particular strata are given in Alehammar (1969). For tutors the same process was used to obtain a sample from the population of tutors at the six large Schools of Education in the country. The strata used in the self-observation study are for both jobs identical with strata used in the interview study (Gestrelius, 1972 a).

2.3.3. *Number of subjects in the experiment*

In accordance with the model described earlier, the respondents were divided into groups of *ten*. This number was thought to be reasonable, considering the number of days registered and the consequent coding work put in relation with time, financial and personnel resources. A total of 70 school principals (42 headmasters and 28 directors of studies) and 50 tutors were selected.

2.3.4. *Introductory conversations*

When the respondents had been selected, the leader of the experiment contacted each of them by telephone in order to give them information and introduce them to the study. On this occasion he explained the purpose of the investigation and asked them to participate. Certain practical details concerning the registrations and the timetable for them were also discussed. A time and address for sending the written instructions and the diary sheets were agreed upon. These telephone contacts were relatively time-consuming, especially those involving the tutors, who were only available at home in the evenings. All the same this personal contact was considered absolutely necessary for the successful execution of the study. An explanation of Project B's view of the job as something separate from the job-holder (Linton, 1936) was presented during the telephone conversation. This insistence that the investigation concerned the *job* and *not* the job-holder himself may possibly have served to diminish the non-response. In this initial introduction the importance of making the registrations as close as possible to the work situations was pointed out and the implications of the situation concept and the difficulty aspect, the U registrations, were explained. Written instructions and diary sheets were sent out in good time before the start of the registration periods.

2.3.5. *Non-response*

Of the 120 subjects selected for the experiment, three (one school principal and two tutors) refused to participate. In each case the reason given was that they did not have time for any extra work because of their present heavy workloads. Three new subjects were selected and promised to participate. Another kind of non-response occurred with respondents who, despite their promise to

take part, did not carry out the registrations. Of the 70 school principals, 67 completed the experiment. The reasons given for the non-response were in two cases illness and in the third organizational changes, which caused unforeseen extra work during the time when data were collected. Of the 50 tutors, 48 completed the registrations. Both cases of non-response were said to be the result of illness. A few respondents did not send in the material within the prescribed time, but after reminders the registrations were received.

Since none of the twelve groups have a lower response frequency than 9 (of 10 asked), it was decided to reduce each group to 9 at random. Henceforth the account presents results from 63 school principals (divided into 7 groups) and 45 tutors (divided into 5 groups).

3. Content analysis

For the systematization of the data collected, the technique used has largely been that which is usually called content analysis (Holsti, 1968).

3.1. Reduction to units

The so-called natural unit (Medley & Mitzel, 1965) which has been used in reducing the written material of the self-observation study is identical with the unit that has been used in the interview study. The material is broken down into single sentences (situations) following certain rules (see Gestrelius, 1970 b, p. 62).

There are obvious advantages in transposing both interview material and self-observation material in the same way, since it creates many opportunities for comparison.

3.2. Construction of categorization patterns

The situations that had been analysed out of the phases with no or only light control were used in the construction of categorization patterns that preceded the strictly controlled phase. These units were registered on cards and consisted of 3488 situations for the school principals and 1886 situations for the tutors. The large difference between the number of situations for the two jobs is explained by the fact that the tutors only function as teacher trainers during part of their working time. The main purpose of the category schedule has been to make it possible to continue a controlled collection of data. The pattern should provide a good survey of the situations and facilitate discussion of them. It should be noted that the categorization patterns in the self-observation investigation were placed directly in the hands of the respondents during the controlled phase. It is only to be expected that such patterns must partly differ in construction from patterns used solely by the researcher for calculations and reports.

Various considerations led to the following categories.

Box 9. Schedule of categories for school principals.

Main categories		No. of sub-categories
I	Own teaching	4
II	Pupils	23
III	Teachers	18
IV	Parents	20
V	Ancillary staff	7
VI	Conferences	17
VII	Authorities	9
VIII	Planning	22
IX	Office work	13
X	Purchases. Budget	21
XI	Premises. Buildings	16

The pattern can be said to have two dimensions, in that categories II—VII represent a contact dimension and categories I, VIII—XI a content dimension. The special registration of persons contacted carried out by the subjects of the experiment becomes superfluous in some cases, but can nevertheless in others serve as a means of acquiring further information.

Box 10. Schedule of categories for tutors.

Main categories		No. of sub-categories
I	Introduction	24
II	Planning	26
III	Demonstration	13
IV	Listening-in	10
V	Analysis	30
VI	Personal contacts	24

The pattern can be said to illustrate the aspects that occur in all tutoring of a longer or shorter duration. What was said previously concerning the registration of persons contacted also applies here, particularly as a special category (VI) has been constructed.

3.3. Sorting the units into the categorization patterns

The third phase of the content analysis as described here involves placing the units obtained by analysis from the uncontrolled and lightly controlled phases in the patterns constructed. This work has been carried out by the job-holders who participated in the construction of the patterns. The method of procedure used in placing the units in the self-observation study has been *open categorization*, which means that the assessor has the entire pattern in front of him. All the basic elements could be fitted into the system. Many synonomous situations

have been found in the material from both school principals and tutors. Thus, to take an example, the units "working with questions concerning the timetable", "being occupied with work on the timetable", "attending to work on the timetable" have been placed in category VIII:9 in the school principal pattern (working on questions concerning the timetable). Assessors who were completely unacquainted with the various sub-categories have checked the way in which the basic units have been sorted into the two patterns.

The subjects themselves sorted the units in the strictly controlled phase, by marking with symbols. Thus if a school principal has marked the diary sheet VIII:9, he (she) has been working on something connected with the timetable. In order to check whether the categorization patterns covered every eventuality, each main category has as its sub-category "others". Comments on this category have been asked for. On the same occasion the subjects were also asked to make other comments on the study. Comments from the respondents were also noted during the contact made by telephone in the introductory phase and in a simple written questionnaire (see section 4). All these comments have been analysed and are taken up below (see section 5).

4. A reliability check by means of a questionnaire

A check was made by means of a simple questionnaire, which was answered by 104 (61 school principals and 43 tutors) of the 108 subjects (63 school principals and 45 tutors).

The distribution of the answers to the questionnaire are given below for all the respondents.

Question 1. When, in relation to the work situation, did you make the registrations on the diary sheets?

	No. of answers	%
Immediately	52	50.0
At the end of the day	43	41.3
After a few days	5	4.8
At the end of the week	3	2.9
At the end of the period	1	1.0

Question 2. How *time-consuming* were the registrations?

	No. of answers	%
Rather little	53	60.6
Very	36	34.6
Far too much	5	4.8

The distribution of the answers with 60.6% on alternative 1 is surprising, considering that those taking part in the preliminary experiment pointed out that self-observation demanded a lot of work. The school principals find the registrations more time-consuming than the tutors. (Cf. the double role of the tutors as both teacher and tutor.)

Question 3. What is your opinion on the *length of the period*?

	No. of answers	%
Should have been shorter	7	6.7
Just right	87	83.7
Could have been longer	10	9.6

Question 4. Were the registrations of any *use* to you (e.g. making you more observant of details in your job)?

	No. of answers	%
None	36	34.6
Some	58	55.8
A lot	10	9.6

Question 5. What do you feel about *participating in research* of this kind?

	No. of answers	%
Meaningful	45	43.3
Participate out of loyalty	57	54.8
Meaningless	2	1.9

Question 6. What do you think of the *reliability* of the registrations you have made?

	No. of answers	%
Very good	32	30.8
Good	68	65.4
Less good	4	3.8

Question 7. Other comments (when applicable).

Answers to question 7 were received from 35 (33.7%) respondents. An account is given in the next section of the comments, together with other points of view concerning the investigation expressed by the respondents.

The answer to questions 3—6 give the impression that the length of the observation period has been felt to be adequate, that the subjects have often become more observant of details in their own jobs, that they take a relatively positive view of participating in research of this kind and that they consider their registrations to be reliable.

5. Comments from the respondents

5.1. School principals

Characteristic features of all supervisory jobs are multiple duties, abrupt changes and heavy work loads (Wirdenius, 1961). This statement is backed up on several occasions in the comments made by the school principals. A simple systematization of the comments has been carried out in order to obtain a broad idea of the content, thus making it easier to give an account of them. A large number of the comments illuminate the heavy work load and consequent lack of time with which the job-holders feel burdened. At the same time there is a general willingness to carry out total registration, though with the admission that an occasional work situation can disappear because of abrupt changes in the job. Some of the comments touch upon factors of which the project leaders were aware, such as the *local nature* of certain situations and the *seasonal variations* in the job. The hope is also expressed that the investigation will show results in the form of organizational improvements, e.g. changes in the compulsory number of teaching hours for principals. — Comments have been made by 42 school principals.

5.2. Tutors

Comments regarding lack of time have also been made by the tutors. Further, it was considered difficult to register the time required for certain sub-categories. Hopes were expressed that the investigation would lead to organizational improvements for the job-holders, so that, for example, one should not need to act as tutor at a school where one did not teach. The general idea of the investigation was thought to be good and the tutors wished to be informed of the results. The seasonal variation was criticised, in that different student teachers demanded differing amounts of work. — Comments were received from 16 tutors.

6. Results

6.1. Job descriptions

It is possible that when the method comparisons described later are made, the total picture of the jobs is lost. Since the collected material has been systematized in the same way, irrespective of the method of collection, summaries are given below based on data collected from all the respondents in each category of job-holder. Analyses of main categories, sub-categories, personal contact registrations, place registrations and uncertainty registrations mean that the data must be examined in more detail. Analyses of frequency and time for the main and sub categories provide insight into the structure of the jobs. The analysis of personal contacts and places reveals something of the immediate environment of the jobs. Since the ultimate goal of Project B is to provide a foundation for future training of the groups of job-holders investigated, it has been decided that a rather comprehensive analysis of the uncertainty registrations should be of interest. It is reasonable to assume that such tasks as are felt by the job-holders to be difficult ought to be included in any planned training.

6.1.1. *The job of school principal*

Sixty-three people have participated as subjects in the school principal study. The job description is based on data obtained from them.

The N figure, which is 81 for variables 1—25 and 54 for variables 26—38, has been introduced in order to make comparisons as in the other reports. (The variables 1—25 were registered by all 63 of the school principals, of whom 18 worked for two two-week periods, whereby N=81. The variables 26—38 were registered by 36 tutors, of whom 18 worked in two two-week periods, whereby N=54.) The variable group 1—3 comprises the uncertainty registrations (Box 7), 4—14 the main categories in the category schedule (Box 9) with frequency calculations, 15—25 the same main categories with time-consumption calculations, 26—33 personal contacts and 34—38 place registrations (Box 7).

For reasons of space, the only example given here is of the results from a variable group which is thought to be of particular interest.

Table 1. Main categories I – XI in the job of school principal (variables 4 – 14): Frequency (N = 81).

Variable	m	s
4. Own teaching	14.98	9.85
5. Pupils	8.08	7.47
6. Teachers	18.88	13.96
7. Parents	5.15	5.27
8. Ancillary staff	2.48	3.53
9. Conferences	14.35	7.66
10. Authorities	3.60	3.38
11. Planning	15.30	9.22
12. Office work	22.77	16.81
13. Purchases. Budget	7.12	7.00
14. Premises. Buildings	2.31	2.55

m = arithmetic mean
s = standard deviation
N = number of subjects

The most frequent tasks are office work and work involving teachers, while problems concerning premises and buildings are, together with cooperating with ancillary staff, less frequent.

Despite the fact that the job description is based on relatively few respondents and the registrations only carried out during certain periods of the school year, it can nevertheless provide an interesting picture of the school principal's job. On an average respondents have registrations for about 8 hours of the day. A multitude of different tasks, often of short duration, are included in the job.

The job-holder often lands in worrying situations as a result of confrontations in various contexts with different personnel categories at the school and a general heavy burden of work. Well-planned training should provide a good preparation for a job that is so difficult to handle.

6.1.2 *The job of tutor*

Forty-five people have participated as subjects in the tutor study. The job description is based on data obtained from them.

The figures are calculated in the same way as in the school principal study. Variable groups 1 – 3 comprise the uncertainty registrations (Box 7), 4 – 9 the main categories in the category schedule (Box 10) with frequencies calculations, 10 – 15 the same main categories with time-consumption calculations, 16 – 21 personal contacts and 22 – 26 place registrations (Box 7).

In the same way as for the school principal job, only one example of the results is given (Table 2).

Table 2. Main categories I – VI in the job of tutor (variables 4 – 9): Frequency (N = 63).

Variable	m	s
4. Introduction	4.95	5.34
5. Planning	17.60	13.76
6. Demonstration	7.97	8.54
7. Listening-in	14.68	11.31
8. Analysis	15.33	12.17
9. Personal contacts	3.17	4.31

Not unexpectedly, the tutors' most onerous tasks are planning, analysis and listening to the student teachers' lessons.

Like the corresponding description for school principals, the job description for tutors is based on a limited number of respondents and the registrations have only been carried out during certain periods. It has been decided, however, that it can be of interest to give a broad view of the activities that are part of the job, based on the collected data. On an average the respondents have registrations for approximately 3 1/2 hours per day.

The planning of lessons, both his own and those of the student teachers, demands a great deal of the tutor. One delicate part of the work is that which involves evaluating the teaching of the student teachers. The job can also include purely welfare elements. What has been said above argues a need for a somewhat more thorough training of tutors than is given at present. Training for lecturers in methodology and tutors could have one section in common for them, followed by specialised training. A model of this type would provide a common frame of reference for the two categories of teacher trainers. Gestrelius (1971) presents job descriptions for teacher trainers based on data collected by means of interviews.

6.2. Comparisons between degrees of control and the length of the observation periods in two-factorial designs

Results are given first from three comparisons for the jobs of both school principals and tutors. The first two for each job respectively have been carried out as pxq factorial experiments with independent random samples. The two factors are fixed and manipulative. The n figures are in each case 9. Factor A, the degree of control, which is of primary interest, has two levels: a_1, light control and a_2, strict control. Factor P, the length and relative order of the observation periods, has the levels b_1 and b_2. For each comparison an account is given of the contents of the levels b_1 and b_2. The number of degrees of freedom is 1 for A, according to formula $(p-1)$, 1 for B according to $(q-1)$, 1 for AB according to $(p-1)(q-1)$ and 32 for error according to $[pq(n-1)]$. The level of significance has been placed at 0.05. The critical F value for 1 and 32 degrees of freedom is

4.15. In connection with the tables presented, there is some discussion of both significant F ratios and F ratios that without being significant are > 1. The tendency towards a_1, a_2 and b_1, b_2 respectively that the different values have can possibly provide a basis for recommendations concerning the variations used. Interaction effects do not occur to such an extent that they jeopardize the interpretation of the main effects. No attempts have been made to interpret the interaction effects that do exist.

The last two comparisons for the respective jobs have been designed as pxq factorial experiments with repeated measurement in B. Otherwise the same conditions as before apply. The number of degrees of freedom are for I, individuals within the group, 16 according to the formula $p(n-1)$, and for I B 16 according to $p(q-1)(n-1)$. The critical value for the chosen level of significance (0.05) is for 1 and 16 degrees of freedom 4.49.

For reasons of space, examples of how the account of the two-factorial comparisons has been presented ate given only for variables 4—14 in the school principal material and for variables 4—9 in the tutor material.

Table 3. School principals: F ratios for different degrees of control, different lengths of observation periods and interaction effects in the main categories I—XI (variable groups 4—14): Frequency.

Variable	Source of variation		
	A	B	AB
4. Own teaching	1.55	< 1	< 1
5. Pupils	< 1	< 1	< 1
6. Teachers	3.44	4.99*	< 1
7. Parents	2.59	3.87	< 1
8. Ancillary staff	< 1	2.59	1.53
9. Conferences	< 1	1.08	< 1
10. Authorities	< 1	< 1	2.30
11. Planning	4.71*	2.59	< 1
12. Office work	13.10*	< 1	< 1
13. Purchases. Budget	< 1	< 1	< 1
14. Premises. Buildings	< 1	2.84	< 1

* Significance at 0.05 level ** Significance at 0.01 level.

Variables 11 and 12 show significant values in the direction a_2, strict control. In the three other variables, which have the value > 1, the result points in the same direction. One significance in factor B has the direction b_1 *one* week, variable 6. The five non-significant values show the same tendency.

Table 4. Tutors: F ratios for different degrees of control, different length of the observation periods and interaction effects in the main categories I – VI (variable group 4 – 9): Frequency.

4. Variable	Source of variation		
	A	B	AB
4. Introduction	14.31**	< 1	< 1
5. Planning	1.97	< 1	< 1
6. Demonstration	5.08*	7.86**	< 1
7. Listening-in	< 1	1.32	< 1
8. Analysis	< 1	< 1	< 1
9. Personal contacts	8.69**	2.24	< 1

In factor A the variables 4, 6 and 9 show significant values in the direction a_2 and variable 5 gives the same tendency. In factor B variable 6 has a significant value in the direction b_1 and variable 7 points in the same direction, while variable 9 goes in the direction of b_2, the first week of a two-week period.

Table 5. School principals: Summary of F ratios for all three comparisons with a two-factorial design.

Direction		No. of $p < .01$	No. of $p < .05$	No. of $F > 1$	Total
A	a_1	–	6	11	17
	a_2	6	9	33	48

Level a_2, strict control, thus provides more information about the job than a_1, light control.

A summary of the three tutor comparisons is given in the same way as for the school principal job.

Table 6. Tutors: Summary of F ratios for all three comparisons with a two-factorial design.

Direction		No. of $p < .01$	No. of $p < .05$	No. of $F > 1$	Total
A	a_1	2	1	3	6
	a_2	5	5	16	26

Strict control, a_2, is more effective than a_1, light control. The school principal comparisons give the same results.

6.3. Comparisons between degrees of control and between seasons for the job of school principal in one-factorial designs

In addition to the previous comparisons, carried out by means of a 2×2 factorial design, three comparisons have been made for school principals and tutors respectively with one-factorial designs. A further comparison using the same model has been carried out, in order to check the seasonal variation of the school principal job. This latter check has no equivalent for the job of tutor. For the first-named comparisons, factor A has three levels: a_1, light control,

a_2, strict control and a_3, no control. For the comparison of seasonal variations, factor A, seasonal variation, has three levels: a_1, normal, a_2, end of term and a_3, beginning of term.

The number of individuals per level is 9 in each comparison and the number of degrees of freedom is 2 for A and 24 for the error. The critical F value for 2 and 24 degrees of freedom is 3.40 for the chosen level of significance (0.05). In the first-named comparisons, level a_3 is not wholly comparable with the levels a_1 and a_2. Level a_3 consists of data collected during a continuous registration period, while levels a_1 and a_2 have been obtained by combinations (see the 2×2 models) of registrations made during different periods. It has been decided that it is of interest to carry out the comparisons all the same. In the check of seasonal variations in the job of school principal, the degree of control in all three levels has been "no control". The number of dependent variables is 25 for the school principals and 15 for the tutors. Person and place variables are namely missing from the one-factorial designs, since the variation "no control" does not take up these possible registrations.

For reasons of space, examples of the reported comparisons in the one-factorial comparisons are presented below only for variables 4--14 in the school principal material and for variables 4—9 in the tutor material.

Table 7. School principals: F ratios for different degrees of control in the main categories I—XI (variable groups 4—14): Frequency.

Variable	Source of variation
4. Own teaching	1.09
5. Pupils	< 1
6. Teachers	1.74
7. Parents	1.03
8. Ancillary staff	< 1
9. Conferences	< 1
10. Authorities	1.27
11. Planning	1.71
12. Office work	6.18**
13. Purchases. Budget	< 1
14. Premises. Buildings	< 1

Variable 12 shows significance in the direction of a_2, strict control, and the other variables with $F > 1$ follow this tendency.

In the same way as for the school principal job, only one example of the results for the tutors is presented.

Table 8. Tutors: F ratios for different degrees of control in the main categories I – VI (variable group 4 – 9); Frequency.

Variable	Source of variation
4. Introduction	6.25**
5. Planning	< 1
6. Demonstration	< 1
7. Listening-in	< 1
8. Analysis	< 1
9. Personal contacts	1.73

Variable 4 shows significant value in the direction a_2, strict control, and variable 9 has the same tendency.

Table 9. School principals: Summary of F ratios for all three comparisons of control levels.

Direction	No. of $p < .01$	No. of $p < .05$	No. of $F > 1$	Total
a_1	–	2	6	8
A a_2	2	3	25	30
a_3	3	1	4	8

The differences between the levels are small. As before, strict control, a_2, seems to obtain somewhat more information. No control, a_3, appears to be preferable to a_1, light control.

Table 10. Summary of F ratios for the comparison of seasonal variations in the school principal job.

Direction	No. of $p < .01$	No. of $p < .05$	No. of $F > 1$	Total
a_1	1	–	–	1
A a_2	–	–	2	2
a_3	1	1	2	4

Two significances and two tendencies point in the direction of a_3, the beginning of the school year. One significance gives values in the direction of a_1, normal period, while two tendencies go in the direction of a_2, the end of the school year. The comparison reveals extremely little seasonal variation. Not unexpectedly, the heaviest work load is to be found in a_3, the beginning of the school year. The slight difference between the levels can be interpreted as showing that the school principals plan their work well and in that way obtain a more even spread of work over the school year. Other interpretations are that, as a result of a heavy work load, the respondents have neglected the registrations during the end of the school year, a_2, and the beginning of the school year, a_3, thus making the periods more even in the final results, or that the seasonal variations variations are not in fact so great. Self-observation is possibly not the right method for checking seasonal variations.

Table 11. Tutors : Summary of F ratios for all comparisons of control levels.

Direction		No. of $p < 0.01$	No. of $p < 0.05$	No. of $F > 1$	Total
A	a_1	–	–	2	2
	a_2	1	1	10	12
	a_3	–	–	6	6

The difference between the tendencies is small. Strict control, a_2, has as before proved to give some more information. The tendencies for a_1, light control, and a_3, no control, produce the same results as the school principal comparisons.

6.4. Discussion of comparisons

The relatively small differences that have been found in the different comparisons appear nevertheless to point in certain definite directions. Dahllöf (1967) and Marklund (1968) are among those who have pointed out in their investigations that not only significances but also the frequency of tendencies should be taken into consideration. The strict control by means of a categorization schedule has proved to provide *more information* about the jobs in the form of more situations than the lighter forms of control, provided that the category pattern covers every eventuality. This result applies to both the two-factorial and the one-factorial designs. The respondents obviously find it easier to describe their jobs if they are given some help, reminded of the activities they are occupied with every day. It is then very important that a category schedule is constructed with extensive coverage. Individual experts should not be allowed to construct the categorization pattern. Data from a large number of experienced job-holders provide a broader basis for the composition of such a schedule. The difference between the two lighter types of control is negligible. It would be most practical to be able to use a registration form with no restrictions worth mentioning for the respondent. Such a form, diary sheets, could be given roughly the same design as the model "no control" had in the present investigation.

The length of the registration periods indicates a tendency towards using the shorter version (table 4). This indication is plainer for the job of school principal (examples are given in the original report). The result can be explained by the the fact that the school principals made considerably more registrations than the tutors and thus had more reason for tiring. The tutors, after all, function only partly in the role of tutor and carry out normal teaching during the rest of the period. One possibility would be to use the shorter period, one week, and instead place it on several different occasions.

A combination of self-observation and interview methods in job analysis could be organized in such a way that self-observation was used in an initial exploratory phase. From the data collected then, an interview schedule could

be constructed, which could then be used in a more controlled phase. The advantage with a procedure of this type is that one can utilize the flexibility in the interview method. Another conceivable strategy would be to start with explorative interviews and create a foundation for a category schedule, which could then be used in a controlled phase with self-observation as the method of collecting data. If, as often happens, one uses considerably more respondents in the controlled phase than in the explorative one, the model suggested last offers important financial advantages.

The comparisons that have been made between corresponding variables for frequency and time produce the result that these types of variable show a similar effect. In practice, this could mean that one confines oneself to obtaining information about frequencies, if one does not wish to burden the respondents with the marking of times. This naturally means that one misses important information, but at the same time there would be gains in motivation. The subjects of the experiment would possibly be more willing to participate if the work involved in registration were reduced.

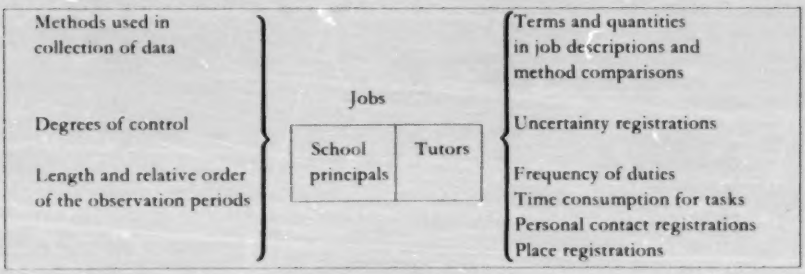
The above discussion of methods for collecting data and different ways of using methods for job analysis within the school sector ought also to be applicable in analyses of executive and supervisory jobs in other sectors of society.

7. Summary

The objective of the investigation, which is part of the project "Job analysis as a basis for training and further education in the school sector: school principals, lecturerers in methodology and tutors" (Project B), has been to test self-observation as a method of collecting data in two of the jobs included in Project B, school principals and tutors. The investigation has also aimed at producing surveys, job descriptions, of the two jobs, based on data collected by means of self-observation.

Experiments have been carried out with different forms of self-observation. The degree of control, that is the freedom given to the respondents when registering, has been varied and also the length of the observation periods. 63 school principals and 45 tutors from all over the country took part in the study, which was mainly carried out during the school year 1969/70. The jobholders were divided into groups and the effect of the different variations was measured by means of frequency and time-consumption analyses (Box 11).

Box 11. Summary of procedure of investigation.



One of the techniques used in processing the collected data has been that usually called content analysis. Important steps in this analysis are reduction to units, construction of categorization patterns and sorting the units into the categorization patterns.

Reliability checks have been carried out on a number of critical points in the investigation. Comments have been collected from the respondents and are reported in a separate chapter.

The strict control has proved to provide more information than the lighter forms of control. Shorter registration periods have given better results than longer ones.

Part II. Teachers in labor market training

1. Introduction

The method used in collecting the data is a variation of the technique described in Part I.

The method has been used to map the problems that teachers engaged in labor market training (LMT) are faced with in their job. This kind of problem inventory could form one of the bases for planning basic training of future LMT teachers and further training for those already in service.

LMT is a form of vocational adult education which is arranged as required with regard to national and local employment policies and which thereby becomes an important instrument in labor market policy. LMT has a two-fold purpose: to ease the situation of the unemployed, handicapped etc. by giving them training, and to ensure that industry has a source of trained labor. At present this form of training is being given at approximately 50 training centers in Sweden. Among the specific features of LMT are that a relatively large number of the trainees are handicapped (approx. 30%), while 15% are immigrants, and that a system of continuous intake of trainees is applied. LMT should be seen as part of the educational system as a whole and not as a limited training institution. The marked similarities between LMT and the vocational training given in the upper secondary school should be kept in mind when discussing, for example, the teaching qualifications required for the two school forms.

So far the training of teachers working in LMT has not been based on empirically collected data concerning the special problems that can exist in LMT compared to the upper secondary school. The objective of this study is to make an inventory of problems of the type mentioned above.

Box 12. Outline of investigatory procedure.

Timetable for study of LMT teaching jobs.

Planning	Diary	Categorization	Evaluation questionnaire	Processing	Reporting

Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1972									1973					

Phase in the study

Phase I	Diary and interview 16 teachers	456 difficult tasks at work 141 difficult tasks at work 597 difficult tasks at work
Phase II	Categorization Checks	573 difficult tasks at work 38 sub-categories 4 main categories
Phase III	Evaluation questionnaire 132 teachers 78 students 61 administrators	69 difficult tasks are assessed according to Occurrence, Training needs Time Present Future

2. Self-observation and follow-up interview

2.1. Centers for labor market training in Malmöhus county

In Malmöhus county there are three LMT centers: Malmö, Helsingborg and Furulund. Statistics obtained from the National Board of Education about the courses offered, the students and teachers at the LMT centers can provide a starting-point for comparisons between the centers studied and the others (Box 13).

Box 13. Trainees divided according to course chosen.

Vocational areas	Whole country	%	Malmöhus county	%
0. Technical, scientific, social science, Arts and artistic	1,808	6.3	192	8.0
1. Administration	30	0.1	30	1.2
2. Accountancy and office work	3,797	13.3	424	17.6
3. Commerce	438	1.5	84	3.5
4. Farming, forestry and fishing	38	0.1	—	—
5. Mining and quarrying etc.	30	0.1	—	—
6. Transport and communication	200	0.7	—	—
7.–8. Manufacturing, machine operation etc.	13,569	47.6	851	35.4
9. Service work	1,116	3.9	117	4.9
10. Training not assignable to any particular vocational area	7,495	26.3	709	29.5
Total	28,521		2,407	

The division into branches of employment in Box 13 was made in accordance with the Nordic classification of employment, with the exception of number 10, which was coded by the Labor Market Board. As can be seen in Box 13, Malmöhus county has courses within the branches of employment which have most trainees in the rest of the country.

2.2. Diary and interview

The first phase in the study consisted of a self-observation (diary) study, with a subsequent follow-up interview. 16 randomly sampled teachers from the three LMT centers in Malmöhus county participated as subjects in the experiment. The sampling was done in such a way that all the teaching areas within each

center were represented. Owing to the organization of the three centers, 6 subjects were taken from Malmö and 5 each from Furulund and Helsingborg.

As was pointed out in Part I, self-observation involves a lot of work for those participating. In order to reduce the demands made on the subjects, a type of critical incident technique (Flanagan, 1949, a, b,; 1954; Jensen, 1951; Wirdenius, 1968) has been used in this investigation. At an introductory conference, the subjects were given a file containing brief written instructions (Box 14).

Box 14. Instruction for diary entries.

1. Write down what you found most difficult in your job today. Give a brief description of the situation(s).
2. You should preferably note several situations the same day. Write down *at least* one each day.
3. If you describe several situations for the same day, number them.

In addition to the instructions mentioned above, the file contained 30 lined sheets with spaces for noting the day and date, but otherwise blank. The sheets were of different colors to indicate the different weeks. On the outside of the file, there was space for noting the name of the center, subject code and name of respondent. The diary was to be kept for six weeks, in order to provide a relatively broad coverage of the term.

In addition to the written instructions, a few further directives were given at the conference. The subjects of the experiment were to inform the leader of the experiment if he/she was unable to participate. If anyone was forced to miss a day or two because of illness or leave of absence, situations were registered for a corresponding number of days after the end of the ordinary period. If more space was required for registration, the back of the diary sheets were used. The respondents were urged not to make very general or trivial registrations, such as "held a lesson" or "low temperature in classrooms". The descriptions of the situations should be more detailed and be more directly connected with the job of the individual. The respondents should not repeat themselves word for word in descriptions, but variations could be accepted. In order to avoid external influence, the subjects should not discuss the registrations among themselves during the period of the investigation. The subjects were asked to register at the end of each working day and to keep the file at their place of employment.

Preliminary times were arranged for the follow-up interviews and the subjects were given the address and telephone number of the leader of the experiment in case they should have any queries later. A fee of 100 Swedish crowns was promised. This fee was to be paid out in person when the files with the registrations were handed over to the leader. The previously arranged follow-up interview was to be held on the same occasion.

At the follow-up interview, each respondent was asked to answer six questions (Box 15).

Box 15. Questions at follow-up interview.

1. a. Have you registered daily or afterwards?
   b. Was the registration period too short, just right or too long?
   c. Did you need to "construct" *difficult* situations?
2. Do you think the difficulties you have noted in the file provide a good picture of the *difficulties* in your job?
3. Can you state further *difficult* situations in addition to those noted in the file?
4. Can you imagine *difficult* situations that have not occurred but that could occur?
5. Can you give examples of *difficult* situations that will arise in the future (considering the developments within LMT)?
6. Can you give examples of *difficult* situations that you have not experienced yourself but that other LMT teachers have experienced?

The diary investigation produced reports on 456 difficult tasks and the follow-up interviews 141 (Box 12).

2.3. Categorization of situations

The systematization of the 597 difficult tasks was carried out by means of the technique that is usually called content analysis (Holsti, 1968), (Box 16).

Box 16. Steps in content analysis.

1. Reduction to *units* (single sentences).
2. Construction of *categorization pattern*.
3. *Sorting* units into categorization pattern.

The units (Medley & Mitzel, 1963) consisted of the exact wordings of the subjects and both the construction of the category schedule and the sorting of the units into the schedule have been carried out by the leader of the experiment and two experienced LMT teachers. The object of constructing the category schedule was that it would provide a good general view of the material and that many of those concerned would be able to handle and accept it. A further purpose was that the schedule should form the basis for the selection of situations for the evaluation stage is described in Chapter 3. The category schedule, which has 4 main categories and 38 sub-categories, is presented in Box 17. 573 of the difficult situations could be placed in the schedule, while 24 were considered impossible to categorize (e.g. "Leave of absence", "Holiday").

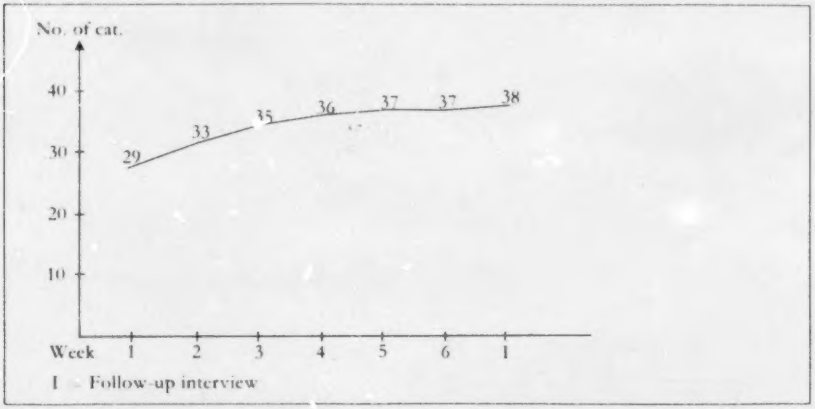
Box 17. Category schedule for critical situations in LMT jobs. The figures in parenthesis mark the frequencies.

Main cat.	1.	**Professional difficulties [229]**
Sub-cat.	1.1	Lack of training in the trade concerned (21)
Sub-cat.	1.2	Lack of training in pedagogics and psychology (91)
Sub-cat.	1.3	Continuous intake (21)
Sub-cat.	1.4	Study materials (24)
Sub-cat.	1.5	Lack of time (7)
Sub-cat.	1.6	Premises (15)
Sub-cat.	1.7	Length of course in relation to level of training (3)
Sub-cat.	1.8	Problems with temporary teaching (4)
Sub-cat.	1.9	Problems connected with the trainees' practice employment (43)
Main cat.	2.	**Difficulties connected with the trainees [240]**
Sub-cat.	2.1	Disciplinary problems (53)
Sub-cat.	2.2	Problems with alcohol and drugs (12)
Sub-cat.	2.3	Mental problems (10)
Sub-cat.	2.4	Physical problems (15)
Sub-cat.	2.5	Sexual problems (2)
Sub-cat.	2.6	Social problems (15)
Sub-cat.	2.7	Political differences of opinion (2)
Sub-cat.	2.8	Low level of achievement (23)
Sub-cat.	2.9	Wide variation within the group (36)
Sub-cat.	2.10	Trainees who overestimate themselves (10)
Sub-cat.	2.11	Language difficulties (21)
Sub-cat.	2.12	Trainees' absence from the training (12)
Sub-cat.	2.13	Trainees' need for leave of absence (6)
Sub-cat.	2.14	Advanced age (4)
Sub-cat.	2.15	Low motivation for training (19)
Main cat.	3.	**Difficulties in relationships [35]**
Sub-cat.	3.1	Teacher – teacher (15)
Sub-cat.	3.2	Teacher – trainee (14)
Sub-cat.	3.3	Trainee – trainee (6)
Main cat.	4.	**Organizational difficulties [69]**
Sub-cat.	4.1	Special difficulties within the center (33)
Sub-cat.	4.1.1	Technical problems concerning the timetable (6)
Sub-cat.	4.1.2	Queueing (4)
Sub-cat.	4.1.3	Requisition of material (10)
Sub-cat.	4.1.4	Thefts (5)
Sub-cat.	4.1.5	Others (8)
Sub-cat.	4.2	Coordination County Employment Board – Center – trainee (33)
Sub-cat.	4.2.1	Lack of information to trainees and teachers (16)
Sub-cat.	4.2.2	Trainees' training grants (2)
Sub-cat.	4.2.3	Acceptance and placing of trainees (3)
Sub-cat.	4.2.4	Placing trainees in employment (5)
Sub-cat.	4.2.5	Misplaced training goals (6)
Sub-cat.	4.2.6	Others (4)

2.4. Information saturation

The concept 'information saturation' implies that continued collection of data will not contribute any new information to the material. In the present investigation, therefore, it is a question of saturation of difficult situations. It is not possible to discuss saturation without having a category pattern. If one works on the basis of the main categories, i.e. maintains a high level of complexity, saturation point is reached fairly quickly. If one goes further down in the pattern, more extensive data collection will be needed before saturation point is reached. Using the pattern presented earlier as a background and starting from the first and second (in main category 4) sub-categories, a total of 38, the problems of information saturation in this investigation are discussed below. Firstly, we can see how the saturation developed in relation to the time during which the self-observations were being registered.

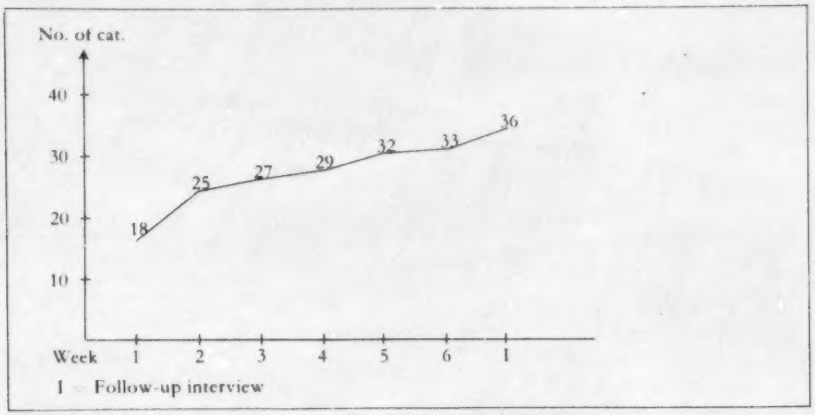
Box 18. Number of new categories per observation week for all subjects in the self-observation study.



Thus this analysis gives us reason to agree with the subjects in the experiment who stated in the follow-up interview that the period of observation could have been shorter. The last two weeks, 5 and 6, together contributed *one* new category. It is possible that a registration period of 4 weeks would have been sufficient. The category that would have been unregistered in that case is 1.7 (Length of course in relation to level of training). The follow-up interview produced the new category 2.5 (Sexual problems).

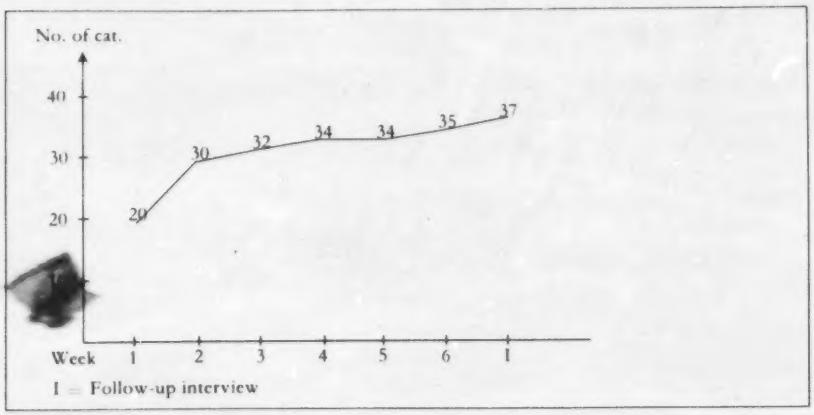
An analysis of the information saturation has also been carried out so as to show the extent to which additional information was received from teachers in theoretical and practical subjects respectively.

Box 19. Number of new categories per observation week for theoretical subjects.



The picture is roughly the same as for the analysis with all the subjects participating in the experiment. If the registrations had been stopped after 4 weeks, 4 categories would have remained unregistered, namely 1.7 (Length of course in relation to level of training), 1.8 (Problems with temporary teachers), 2.7 (Political differences of opinion) and 4.2.3 (Accepting and placing trainees). The follow-up interview produced 3 new categories: 2.5 (Sexual problems), 4.2.5 (Misplaced training goals) and 4.2.6 (Coordination between County Employment Board – Center – trainees: Others). Categories 1.9 (Problems connected with the trainees' practice employment) and 4.2.2 (Trainees' training grants) were not covered by the material from the theoretical subjects.

Box 20. Number of new categories per observation week for practical subjects.



If the observation period had been limited to 4 weeks, the category 4.1.2 (Queueing) would not have been included. The follow-up interview contributed the categories 1.7 (Length of course in relation to level of training) and 2.3 (Mental problems). 2.5 (Sexual problems) was not covered by the material from the practical subjects. Thus information saturation was reached somewhat more quickly via the material from the practical subjects compared to material from the theoretical subjects.

The analyses that have been presented here show that information saturation can be said to set in after about 4 weeks. The last 2 weeks, 5 and 6, added few new categories to the material. If the length of the registration period had been extended, it is possible that one or two more categories would have appeared. The follow-up interview came to play a certain role for the abundance of the information, partly because some of the questions introduced new conditions for the critical situations.

The number of respondents is naturally of some significance in this context. It is possible that information saturation would have been reached sooner with a larger number of subjects in the experiment. There were several reasons why so few respondents were used. The small number made it possible to reduce the disturbance of the work at the various centers to a reasonable level and the follow-up interviews could be carried out on suitable occasions with the resources that are available to the project. When discussing information saturation, one must continually try to maintain a balance between the resources, moneywise and staffwise, that have been invested and the gain that this investment gives in terms of valuable information.

3. Questionnaire for evaluation of situations

The third and last phase of the study consisted of an assessment questionnaire (for more detailed discussion of this, see Alehammar, 1973). The purpose of the questionnaire was that different groups of assessors should be given the opportunity to assess a number of typical tasks from different aspects in order to extract the most important situations. Comparisons could then also be made between assessments from different groups and between registrations made by assessors with different background data (sex, age, etc.).

3.1. Selection of situations

It proved in practice to be impossible to include all 573 situations in the investigation. The question is then how a representative sample is to be taken from the material as a whole. From a purely statistical point of view, random sampling is usually considered the most suitable method. One important argument against simple random sampling is that small but from the training point of view important areas can be unrepresented. Another approach is to compress the entire material to a level of complexity that is decided by the number of situations that it is possible to have assessed. Thus by using this method, all the data is coded. A further possibility is to divide the questionnaire so that each group of assessors only works with one part of it.

After the question had been discussed with experienced job-holders, a total assessment time of a maximum of 90 minutes was decided upon. Even at this early stage the number of coding aspects must be decided, since otherwise it will not be possible to calculate the number of situations that it will be possible to get assessed. Following our earlier experience, it was decided to use five, namely occurrence, training need, time, present and future aspects. If one calculates that each individual assessment takes 10 seconds and that reading through the actual situation takes an equally long time, one situation would thereby require an assessment time of 1 minute. Allowing a certain amount of a safety margin, it should be possible to deal with 80 situations in the amount of time to be allowed.

This decision was followed by the following discussion on the selection of the situations.

The categorization pattern contained 38 sub-categories of the first order. Each such category should be represented. An equally large number, 38, was selected in proportion to the number of basic elements in the category. In this way it was decided that the number of situations should be 76. The original situation descriptions were reformulated. The formulations of the situations in the assessment questionnaire can be said to form a re-categorization, so that the level of complexity was placed between sub-categories of the first order and the level of the basic elements. The situations must be formulated in such a way in the questionnaire that the coders easily understand what is being referred to. The two job-holders who participated in the construction of the pattern have been responsible for the formulation, together with the leader of the experiment. After the 76 situations had been gone through, 9 were ruled out as being identical, while 2 situations were broken down into 4 more unambiguous formulations. In this way the 69 situations that were included in the final version of the questionnaire were obtained (Box 21).

Since in the original material the self-observation data and interview data had been expressed in the form of statements, this was retained in the assessment questionnaire. The situations were numbered at random from 1 to 69.

3.2. Checking of selection

An attempt has been made to check the selection of the situations that were to be included in the assessment questionnaires by giving the entire categorized material, the 573 situations, to a third experienced LMT teacher. In order to obtain a quantifiable measure of the agreement between coder A and B, who constructed the assessment questionnaire, and the "checker" C, the 76 situations chosen by A and B before the reformulation were compared to a corresponding selection made by C. The number of situations that was to be taken from each category by A, B and C is shown in Box 10. In 81.6% of the cases, C chose the same situations as A and B. The coder agreement can be said to be acceptable for our present purpose.

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Box 21. Distribution of the situations selected for the assessment questionnaire.

Main cat.	1.	**Professional difficulties [26]**
Sub-cat.	1.1	Lack of training in the trade concerned (3)
Sub-cat.	1.2	Lack of training in pedagogics and psychology (7)
Sub-cat.	1.3	Continuous intake (2)
Sub-cat.	1.4	Study materials (4)
Sub-cat.	1.5	Lack of time (2)
Sub-cat.	1.6	Premises (2)
Sub-cat.	1.7	Length of course in relation to level of training (1)
Sub-cat.	1.8	Problems with temporary teachers (1)
Sub-cat.	1.9	Problems connected with the trainees' practice employment (4)
Main cat.	2.	**Difficulties connected with the trainees [26]**
Sub-cat.	2.1	Disciplinary problems (5)
Sub-cat.	2.2	Problems with alcohol and drugs (1)
Sub-cat.	2.3	Mental problems (1)
Sub-cat.	2.4	Physical problems (1)
Sub-cat.	2.5	Sexual problems (1)
Sub-cat.	2.6	Social problems (2)
Sub-cat.	2.7	Political differences of opinion (1)
Sub-cat.	2.8	Low level of achievement (3)
Sub-cat.	2.9	Wide variation within the group (3)
Sub-cat.	2.10	Trainees who overestimate themselves (1)
Sub-cat.	2.11	Language difficulties (1)
Sub-cat.	2.12	Trainees absence from the training (2)
Sub-cat.	2.13	Trainees' need for leave of absence (1)
Sub-cat.	2.14	Advanced age (1)
Sub-cat.	2.15	Low motivation for training (2)
Main cat.	3.	**Difficulties in relationships [3]**
Sub-cat.	3.1	Teacher – teacher (1)
Sub-cat.	3.2	Teacher – trainee (1)
Sub-cat.	3.3	Trainee – trainee (1)
Main cat.	4.	**Organizational difficulties [14]**
Sub-cat.	4.1	Special difficulties within the Center (6)
Sub-cat.	4.2.1	Technical problems concerning the timetable (1)
Sub-cat.	4.3.2	Queueing (1)
Sub-cat.	4.1.3	Requisition of material (1)
Sub-cat.	4.1.4	Thefts (1)
Sub-cat.	4.1.5	Others (2)
Sub-cat.	4.2	Coordination between County Employment Board – Center – trainee (8)
Sub-cat.	4.2.1	Lack of information to trainees and teachers (2)
Sub-cat.	4.2.2	Trainees training grants (1)
Sub-cat.	4.2.3	Acceptance and placing of trainees (1)
Sub-cat.	4.2.4	Placing trainees in employment (1)
Sub-cat.	4.2.5	Misplaced training goals (2)
Sub-cat.	4.2.6	Others (1)

3.3. Aspects of evaluation

The coders were asked to assess each of the 69 difficult tasks, with the help of seven-point scales, from the five aspects, occurrence, training need, time, present significance and future significance (Box 11). A further registration possibility, "Cannot be assessed" was added in order to increase the reliability of the assessments.

The five assessment aspects were considered to provide indicators as to the training needs of the tasks. In the very first phase of the data collection, the actual technique, the critical incident method, meant that an assessment was made by only *difficult* tasks being registered. Those situations that were felt by the job-holders themselves to be difficult should presumably be emphasized when training is being planned.

Box 22. Aspects in the assessment questionnaire.

This is a situation with which I have been faced

0	1	2	3	4	5	6

Never — Often

Occurrence aspect ☐

Cannot be assessed

Comment: You should here assess how often you yourself have actually been faced with the situation described. Put × in one of the seven squares. If you consider that it is *absolutely* impossible to assess the situation from the point of view of occurrence, put X in the square: Cannot be assessed.

This situation contains for me with the experience I now have

0	1	2	3	4	5	6

No training need — Great training need

Training need aspect ☐

Cannot be assessed

Comment: You should here assess whether you would have dealt with the situation better if you had been given some form of training in mastering it. Put × in one of the 7 squares. If you consider that it *absolutely* impossible to assess it from the point of view of training need, put × in the square: Cannot be assessed.

How much time does this situation require

0	1	2	3	4	5	6

No time — Long time

Time aspect ☐

Cannot be assessed

Comment: You should here assess how much time (a rough estimation) the situation requires in all during a working year. Put × in one of the 7 squares. If you consider that it is *absolutely* impossible to assess the situation from the point of view of time, put × in the square: Cannot be assessed.

Considering the *present* working conditions of LMT teachers, the situation has

0	1	2	3	4	5	6

No significance — Great significance

Present aspect ☐

Cannot be assessed

Comment: You should here assess how significant you yourself feel the situation to be today. Put × in one of the 7 squares. If you consider that it is *absolutely* impossible to assess the situation from the point of view of present significance, put × in the square: Cannot be assessed.

Considering the *future* working conditions of LMT teachers, does the situation have

0	1	2	3	4	5	6

No significance — Great significance

Future aspect ☐

Cannot be assessed

Comment: You should here assess how significant you think the situation will be in about 1980 (considering the probable development during the 1970's). Put × in one of the 7 squares. If you think it is *absolutely* impossible to assess the situation from the point of view of the future, put × in the square: Cannot be assessed.

3.4. Assessors

The assessors who participated in the assessment questionnaire are presented in Box 23.

Box 23. Subjects of experiment in assessment phase.

Center	Teachers	Trainees	Administrators	Total
Furulund	57	10	7	74
Helsingborg	24	14	6	40
Malmö	51	10	8	69
Rest of Sweden	—	44	44	88
Total	132	78	61	271

The teachers are all teachers at the three centers with at least half a full teaching job. The trainees from the centers in Malmöhus county are active on the Student Council and have been chosen from different sectors of the training. The trainees from the centers in the rest of Sweden consist of one representative from the Student Council of each of the 44 centers. The administrators in Malmöhus county all hold administrative posts, such as headmaster, director of of studies and training supervisor (subject leaders). The administrators from centers in the rest of Sweden are the headmaster or a substitute appointed by him from each of the 44 centers. At the same time as they answered the questionnaire, the teacher group also filled in a sheet with background data (age, sex, education etc.).

3.5. Comparisons of assessor groups

Examples are given below of situations that produced differences between the groups of assessors.

Category and situation	Total mean	F	p	ω^2	Malmöhus county: Students	Teachers	Administrators
1. Professional difficulties					Occurrence aspect		
1.8 Problems with temporary teachers	2.42	5.43	**	0.051	3.42	2.14	2.47
25. Difficulties occur in introducing					Training need aspect		
temporary teachers to the work situation	1.47	9.72	**	0.102	2.63	1.18	1.00
					Time aspect		
	1.97	9.78	**	0.096	3.03	1.65	2.12
1. Professional difficulties					Students at centers in		
1.3 Continuous intake					M.county		Rest of Sweden
56. The system with continuous intake					Occurrence aspect		
has been pushed too far	2.71	5.14	*	0.056	3.34		2.18
					Training need aspect		
	2.31	5.31	*	0.065	2.89		1.78
					Time aspect		
	2.72	5.24	*	0.068	3.27		2.14
					Present aspect		
	3.10	6.72	*	0.086	3.74		2.43
					Future aspect		
	3.50	5.84	*	0.072	4.03		2.90
1. Professional difficulties					Admin. at centers in		
1.2 Lack of training in pedagogics					M.county		Rest of Sweden
and psychology							
13. The welfare element in the LMT teacher's					Time aspect		
work situation is tending to increase	2.32	10.14	**	0.140	3.25		1.95
					Present aspect		
	3.20	4.33	*	0.053	4.06		2.88
					Future aspect		
	3.93	5.49	*	0.074	4.81		3.56

						Training need aspect		
1. Professional difficulties						Teachers in M.county		
1.3 Continuous intake						Teaching area		
39. The continuous intake affects the planning of lessons and the giving of lessons					Industry	Business	Others	
	2.80	4.88	*	0.064	2.44	3.49	1.92	
						General schooling		
					Element. school	Comprehen-sive school County college GCE O levels	GCE A levels	
	2.81	4.71	*	0.060	2.12	2.93	3.38	
						Vocational training		
					Vocat-ional school	Univ. educ.	Other voc training	
	2.98	4.21	*	0.071	2.14	3.48	3.33	
						Teacher training		
					Voc. instit. of Education Tech. Voc. course Sandwich course	School of Education	Other teacher training	No teacher training
	2.80	3.13	*	0.056	2.55	3.23	1.75	3.43

The continuous intake in LMT and the welfare element in the teaching jobs are assessed differently. These problems must also make it more difficult to introduce temporary teachers to the work. When the assessor groups in Malmöhus county are compared, it is the students who are most observant of the difficulties faced by temporary teachers. It is possible that these difficulties have not been noticed by teachers and administrators.

When Malmöhus county and the rest of Sweden are compared, the assessors from Malmöhus county are consistently responsible for the high values, that is to say they consider that the problems occur more often, require more training, take up more time and are more significant today and in the future. This regular tendency could possibly be explained by the fact that the centers in Malmöhus county largely represent catchment areas of an urban nature. Problems with continuous intake and welfare work could be accentuated in such areas. Comparisons between teachers with different background data show that teachers with theoretical training behind them feel the greatest need for training related to problems caused by the continuous intake. The heterogeneity of the student groups can be more difficult to overcome in the theoretical subjects. Another interpretation is that the earlier training these teachers have had makes them more observant of the problems. It is only natural if teachers without previous teacher training feel a need for training when faced with these problems.

Comparisons were made between different assessor groups in the three centers in Malmöhus county and between assessments from assessors in Malmöhus county and the other centers in the country. Comparisons were also made between teachers with different background data. On the whole the result was that few differences could be discerned. The difficult tasks were assessed similarly. For these analyses, one-factorial ANOVA have been used throughout. Discussion of the differences between groups is limited to a significance on a 5% level and $\omega^2 \geq 0.05$.

3.6. Connections between aspects

Box 24. Connections between assessment aspects (Spearman's rank correlation coefficient).

Situations					
Aspects	Occurrence	Training need	Time	Present	Future
Occurrence	–	0.53	0.81	0.75	0.61
Training need	0.53	–	0.67	0.61	0.64
Time	0.81	0.67	–	0.71	0.64
Present	0.75	0.61	0.71	–	0.88
Future	0.61	0.64	0.64	0.88	–
Sub-categories					
Aspects	Occurrence	Training need	Time	Present	Future
Occurrence	–	0.44	0.84	0.73	0.57
Training need	0.44	–	0.61	0.58	0.63
Time	0.84	0.61	–	0.70	0.61
Present	0.73	0.58	0.70	–	0.90
Future	0.57	0.63	0.61	0.90	–

The connections between the assessments are consistently high. The highest value is shown in the connections between the present and future aspects. There is also a high level of agreement between the occurrence and time aspects, which is a result that could be expected. The above results could possibly be interpreted as meaning that it would be enough to take one of the aspects marking frequency and duration and one of the aspects marking importance, today and in the future. The training need aspect produces relatively low agreement values in relation to the other aspects. High connections between the assessment aspects indicate that in similar future investigations, a smaller number of the aspects used in this study would suffice. Because of the high connections between the occurrence and time aspects and between the present and future aspects, only the occurrence, future and training need aspects will be reported in this compressed presentation.

3.7. Total means and rankings

The total means and ranking based on all the assessors from Malmöhus county are given for three aspects. Rank 1 stands for the situation that is most frequent, most needs training and is most important for the future. The 69 assessed situations are presented placed in a category schedule (Boxes 17 and 21). The situations have been given the same numbers as in the questionnaire.

The total means and rankings for the aspects occurrence, training need and future are presented below.

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
1. PROFESSIONAL DIFFICULTIES						
1.1 Lack of training in trade						
8. Technical developments make it necessary for the LMT teacher to renew his experience of the shop floor	3.37	19	3.63	4	4.55	3
16. Technical developments necessitate further practical training in the LMT teacher's branch	3.60	15	3.93	1	4.67	1
33. Technical developments necessitate further theoretical training in the LMT teacher's branch.	3.66	12	3.84	2	4.57	2
1.2 Lack of training in pedagogics and psychology						
1. Situations arise in the teaching when the trainee is unoccupied because of e.g. a lack of working material.	1.32	60	1.37	45	3.58	37
5. The trainees become inactive in subjects that do not interest them.	3.44	16	2.82	10	3.90	23
11. The theoretical contexts are difficult to explain and to relate to reality.	1.61	56	2.30	17	3.62	36
12. The LMT teacher knows too little about the students.	2.71	38	2.66	13	3.95	20
13. The welfare side of the LMT teacher's work is tending to increase.	3.26	23	3.14	5	4.20	10
22. The LMT teacher knows too little about how the LMT organization works.	2.53	42	2.69	12	3.37	43

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
38. Psychological insight is needed, since the trainees are so different in age, social situation etc.	4.42	2	3.71	3	4.35	5
1.3 Continuous intake						
39. The continuous intake affects the planning of lessons and the giving of lessons.	4.56	1	2.95	8	4.18	12
56. The system of continuous intake has been pushed too far.	3.26	23	2.23	21	3.80	27
1.4 Study material						
35. There is a lack of programmed study material.	3.14	25	2.20	22	3.63	35
54. Errors often occur in literature, central tests, working instructions etc.	2.03	48	1.33	47	3.26	47
57. There is a lack of material for demonstration.	2.96	30	1.96	29	3.62	36
61. There is a lack of mechanical equipment.	1.55	58	1.96	29	3.62	36
1.5 Lack of time						
3. The time needed for paper work is tending to increase.	3.41	17	1.71	39	4.25	9
55. There is too little time for teacher and trainees to make contact in conversation.	2.88	35	1.81	34	3.90	23
1.6 Premises						
9. There is a lack of classrooms at the Center.	2.36	36	1.17	54	3.93	22
14. The premises are not suitable as an environment for teaching.	2.68	40	1.13	55	4.03	17
1.7 Length of course in relation to level of training						
32. The training period is too short to give the trainee the ability to function on the labor market.	3.25	24	2.19	23	4.27	7
1.8 Problems with temporary teachers						
25. Difficulties occur in introducing temporary teachers to the work situation.	2.42	44	1.47	44	3.07	53

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
1.9 Problems connected with the trainees practice employment						
23. When employed for practice, the trainees are utilized more for production than for training.	2.43	43	1.67	40	3.44	17
51. It is difficult to obtain practice employment for trainees.	3.22	24	1.92	31	3.97	19
52. Supervisors and other workers at places where trainees have practice employment have preconceived ideas about LMT trainees and look down on them.	3.64	13	2.10	26	4.19	11
53. Difficulties occur in maintaining contact and cooperation between the Center and places where trainees have practice employment.	1.99	49	1.37	45	3.56	38
2. DIFFICULTIES DEPENDING ON THE TRAINEES						
2.1 Disciplinary problems						
17. Trainees are not punctual.	2.74	37	1.01	58	3.48	40
37. Cheating occurs.	1.56	57	1.01	58	2.62	58
58. Trainees deliberately disturb the teaching and discipline at work.	0.97	62	1.22	50	3.34	45
59. Trainees do not follow instructions and directives given.	1.67	54	1.32	48	3.71	31
67. Trainees are absent from lessons without explanation.	1.80	53	1.10	56	3.08	52
2.2 Problems with alcohol and drugs						
4. Problems with alcohol and drugs occur among the trainees.	1.97	50	2.77	11	4.26	8
2.3 Mental problems						
45. It occurs that trainees are mentally disturbed.	2.89	34	2.77	11	3.73	29
2.4 Physical problems						
15. Physically handicapped trainees have greater difficulty in assimilating the teaching.	2.11	47	2.53	15	3.45	41

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
2.5 Sexual problems						
60. Sexual deviations occur among the trainees.	0.88	64	0.97	60	1.47	60
2.6 Social problems						
24. Trainees have financial problems.	4.24	2	1.76	37	3.84	25
26. Trainees have difficulties with child-minding.	3.27	22	1.21	51	3.44	42
2.7 Political differences of opinion						
7. Conflicts arise between trainees because of political differences of opinion.	0.94	63	1.27	49	2.84	55
2.8 Low level of achievement						
42. Low-ability trainees feel the training to be less worthwhile.	3.40	18	2.25	20	3.74	28
44. The intake of trainees with low intellectual qualifications is tending to increase.	2.93	31	1.90	33	3.67	32
66. The low-achieving trainees cannot obtain sufficient help in their studies.	3.06	28	2.29	18	3.94	21
2.9 Wide variation within the group						
6. The training goals are set too high in relation to the trainees' basic education.	2.16	46	2.10	26	3.64	34
29. The teaching situation is made more difficult by trainees' varying basic knowledge.	4.03	7	2.97	7	4.04	16
50. The combination of weakness in the Swedish language and low basic education found in many immigrants makes them unsuitable for labor market training.	3.63	14	2.64	14	4.12	14
2.10 Trainees who overestimate themselves						
49. The trainee finds it difficult to realize that he/she lacks the necessary prerequisites for a certain kind of vocational training.	2.92	32	2.12	25	2.72	30

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
2.11 Language difficulties						
63. The teaching is made more difficult by the immigrants' deficiencies in the Swedish language.	4.22	3	2.91	9	4.30	6
2.12 Trainees' absence from the training						
43. A high rate of absenteeism among the trainees disrupts the planned teaching.	3.31	21	1.58	41	3.72	30
47. It is difficult to check whether a trainee's absence is valid or not.	3.86	9	1.34	46	2.81	56
2.13 Trainees' need for leave of absence						
The reasons given by trainees for leave of absence are difficult to check.	4.04	6	1.50	43	2.74	57
2.14 Advanced age						
40. Older trainees are handicapped.	2.90	33	2.14	24	3.09	51
2.15 Low training motivation						
18. Training motivation is low in trainees who have little chance of getting a job after the termination of the course.	2.89	34	2.01	27	4.04	16
31. Motivation for practical training is low in trainees with high theoretical education.	2.38	45	1.94	30	3.27	46
3. DIFFICULTIES IN RELATIONSHIPS						
3.1 Teacher – teacher						
65. Difficulties in cooperating exist between teachers.	1.64	55	1.22	50	3.18	49
3.2 Teacher – trainee						
41. Difficulties in cooperating exist between trainees and teachers.	1.21	61	1.54	42	3.22	48
3.3 Trainee – trainee						
62. Difficulties in cooperating exist between trainees	1.88	51	1.72	38	3.16	50

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
4. ORGANIZATIONAL DIFFICULTIES						
4.1.1 Technical problems connected with the timetable.						
36. Constant changes in the timetable make the LMT teacher's work situation more difficult.	1.81	52	1.19	53	3.35	44
4.1.2 Queueing						
2. A large part of the trainees' lunch break is spent standing in a queue.	3.09	26	0.98	59	2.87	54
4.1.3 Requisition of material						
28. Requisition of material is made more difficult by a bureaucratic system.	3.83	10	1.78	36	4.42	4
4.1.4 Thefts						
69. Theft of property belonging to the Center occurs.	2.70	39	1.02	57	3.54	39
4.1.5 Others						
10. The teacher is forced to find time for certain tasks which are not part of his/her routine, but which must be done since the system does not function.	2.58	41	2.00	28	3.86	24
30. Trainees must give up some of their time in order e.g. to help build teaching stations.	1.35	59	0.95	61	2.46	59
4.2.1 Lack of information to trainees and teachers						
19. The County Employment Board gives the trainees insufficient information about labor market training.	4.01	8	2.37	16	4.03	8
48. The teacher is not informed about serious deficiencies in the trainees' physical and mental condition.	3.74	11	2.14	24	4.09	15
4.2.2 Trainees' training grants						
68. Mistakes in the training grants cause irritation among the trainees.	4.10	5	1.80	35	3.82	26

Category and situation	Occurrence		Training need		Future	
	Total mean	Total rank	Total mean	Total rank	Total mean	Total rank
4.2.3 Acceptance and placing of trainees						
27. Coordination is bad between the County Employment Board and the Center when new trainees are accepted.	3.01	45	1.80	35	3.98	18
4.2.4 Finding employment for trainees						
21. The chances of finding employment for trainees with little proficiency are small.	4.18	4	1.91	32	4.35	5
4.2.5 Misplaced training goals						
34. Trainees are not informed of the physical attributes necessary for certain training.	2.89	34	2.27	19	3.98	18
46. Misplaced training goals create difficulties for the trainees.	3.08	27	2.14	24	4.14	13
4.2.6 Others						
20. Trainees turn primarily to the teacher for help in questions of the welfare type.	3.36	20	3.13	6	3.54	39

The level of the total means for all the assessors in Malmöhus county is different for the three aspects. The assessments are highest in the future aspect and lowest in the training need aspect. Situations that have relatively high values in all three of the aspects reported concern the need for further training for the I.MT teachers because of the rapid technical development, the welfare element in the jobs, heterogeneity in the student groups, the continuous intake and language difficulties. Situations with relatively low values in the three aspects concern mainly problems of relationships and disciplinary problems, which are obviously handled with little difficulty.

3.8. The most important situations

The total means in the three aspects were transferred to z points. The situations were then ranked in accordance with the sum of standard points. Box 25 presents the ten most highly ranked situations.

Box 25. The ten situations with the highest rankings.

Situation	Category	Sum of standard points	Ranking
38. Psychological insight is needed, since the trainees are so different in age, social situation etc.	1.2	5,4	1
16. Technical developments necessitate further practical training in the LMT teacher's branch.	1.1	5,3	2
33. Technical developments necessitate further theoretical training in the LMT teacher's branch.	1.1	5,0	3
8. Technical developments mean that the LMT teacher needs to renew his experience of the shop floor.	1.1	4,5	4
39. Continuous intake affects the planning of lessons and giving of lessons.	1.3	4,2	5
63. The teaching is made more difficult by the immigrants' deficiencies in the Swedish language.	2.11	4,0	6
29. The teaching situation is made more difficult by the trainees' varying basic knowledge.	2.9	3,3	7
15. The welfare side of the LMT teacher's work is tending to increase.	1.2	2,9	8
21. The chances of finding employment for trainees with little proficiency are small.	4.2.4	2,8	9
19. The County Employment Board gives the trainees insufficient information about labor market training.	4.2.1	2,6	10
50. The combination of weakness in the Swedish language and low basic education found in many immigrants makes them unsuitable for labor market training.	2.9	2,6	10

It is obvious that the teachers in LMT are in need of some form of recurrent training to enable them to keep up with the rapid advance of technology. Another great problem is the heterogeneity of the student population, which in combination with the continuous intake and the language difficulties of the immigrants demands special measures. The difficulties that many of the trainees have in their private lives lead to the teachers in LMT having to take on the role of social worker, a role for which many of the teachers are not prepared. Purely organizational problems, such as the difficulty of finding employment for trainees with low proficiency after the completion of the training and the deficient information from the County Employment Board to the trainees, have noticeable repercussions on the work of the LMT teachers.
Box 26 shows the five situations with the lowest rankings.

Box 26. The five situations with the lowest rankings.

Situation	Category	Sum of standard points	Ranking
58. Trainees deliberately disturb the teaching and discipline at work.	2.1	−3,7	45
7. Conflicts arise between trainees because of political differences of opinion.	2.7	−4,6	46
37. Cheating occurs.	2.1	−4,7	47
30. Trainees must give up some of their time in order e.g. to help build teaching stations.	4.1.5	−5,3	48
60. Sexual deviations occur among the trainees.	2.5	−7,9	49

According to the assessors, the disciplinary situation in LMT is good, as is the cooperation between the groups of job-holders.

4. Summary and discussion

The aim of the study has been to make an inventory of problems that teachers in LMT meet in their jobs. This inventory would then provide a basis for future training.

The methods for data collection used have been a modified form of the critical incident technique, interview and questionnaire. 149 teachers, 78 students and 61 administrators from within LMT have participated in the investigations during different periods. The project, which was conducted during the school year 1972/73, can be divided into three main phases (Box 12).

The first phase, which occurred during the autumn of 1972, consisted of a data collection using a critical incident diary, in which the subjects were to note each day for six weeks that day's most difficult task. A follow-up interview was held with all those who had kept such a diary.

Phase two consisted of a content analysis of the collected material. Experienced LMT teachers were asked to contribute expert advice in the construction of a categorizing schedule and the sorting of units into the schedule. An analysis was also made of information saturation.

The third phase consisted of an assessment of the collected data. An assessment questionnaire was constructed, using material from the diary phase as a basis. Experienced LMT teachers were employed for the construction work, which was also checked. Teachers, students and administrators in LMT were selected to assess the material in the questionnaire from five aspects: occurrence, training need, time, present and future.

As can be seen, an effort has been made to maintain a close field contact throughout entire study. This facilitates communication between researchers and consumers.

Analyses have been made of differences between the different coder groups in the aspects named above. In the majority of the assessments, no differences could be ascertained. The aspect that showed most differences was training need. In this aspect analyses have been made concerning differences between LMT teachers with different background variables. On the whole the coders assess the data in a similar way. The background variable that produces most differences is the teachers' professional training. The problem situations that receive high values in all aspects deal with the lack of training in one's own branch to keep up with the rapid technical development, the welfare element in

the jobs of LMT teachers and the heterogeneous student groups. The differences between the trainees in the groups are intensified by the system of continuous intake and by the immigrants' deficiencies in the Swedish language. The situations that are presented in Box 25 can be said to have a particular need for training.

The problem situations that get low values (Box 26) in all aspects mainly concern difficulties in relationships between different groups and individuals with the LMT organization.

When comparing the level of the assessments in the different aspects, one often finds high values in the occurrence and future aspects, but low values for the same tasks in the training need aspect. The difficult situations are considered frequent and important but not to require training. The difference of level in the scales between these aspects can be explained, however. It must be much easier for the coders to say how frequent and important a problem situation is than to estimate the need for training. Experienced educational planners would probably find it easier to see the connection between the situation and the training required.

Although the training need aspect has an important place in this study, our aim has been to make the other aspects equally important when judging how urgent the need for training is in the various situations. It should also be remembered that only difficult situations have been collected. These are in themselves interesting from a training point of view.

The inventory and the analysis of difficult tasks faced by LMT teachers in their jobs that have been presented in this study should be of use as a starting point when basic training and further training for teachers in LMT are being planned. The task force "Investigation and proposals concerning the training and appointment of teachers in labor market training" (AMU/L 1970) has in its report discussed problems that are closely connected with those discussed in this study. Since the task force has not worked with empirically collected data, the results obtained in the present report could possibly provide a basis for necessary decisions. The committee for reviewing LMT (KAMU), which started work in 1972 and is to produce its findings in 1979, should also be able to obtain relevant information from this account. It would be conceivable to use the collected and assessed material as a basis for planning training for LMT teachers. Such training could be included as part of the regular training of vocational teachers in the technical vocational courses (TVC) at the Schools of Education and should then be regarded as basic training. It should also be possible to use certain parts of that training section as in-service training for active LMT teachers.

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